Amendments to the Claims

This listing of claims will replace all prior version, and listings, of claims in the application:

Listing of Claims:

1. (original) A method for storing data in a solid state storage device having at least one array of magnetoresistive storage cells, the method comprising the steps of:

encoding original data with a Reed-Solomon code to generate one or more codewords including 2T check symbols, using a generator polynomial g(x) of the form:

$$g(x) = (x + a^{L})(x + a^{L+1})(x + a^{L+2})\ldots(x + a^{L+2T-1})$$

where $0 \le L < 255$ and $T=16$; and

storing the one or more codewords in the at least one array of magnetoresistive storage cells.

2. (original) The method of claim 1, wherein L=1.

3. (original) The method of claim 1, wherein L=112.

4. (original) The method of claim 1, comprising dividing a sector of original data into a plurality of sub-sector units, and encoding each sub-sector unit to form one codeword.

5. (original) The method of claim 1, comprising encoding a sector of original data of length 512 bytes to generate four codewords each of length 160 bytes including 128 information symbols and 2T=32 check symbols.

6. (original) The method of claim 5, comprising storing the four codewords in a macro-array having a plurality of arrays of magnetoresistive storage cells.

7. (original) The method of claim 7, comprising storing the four codewords across the macro-array to be accessible substantially simultaneously.

8. (original) The method of claim 1, comprising reading the stored encoded data from the at least one array, and decoding the stored encoded data.

9. (original) A method of encoding data for storage in a solid state storage device comprising a macro-array formed of a plurality of arrays of magnetoresistive storage cells, the method comprising the steps of:

receiving a sector of original data;

dividing the sector of original data into a plurality of sub-sector units;

encoding each sub-sector unit with a Reed-Solomon code to generate a code word including 2T check symbols, using a generator polynomial g(x) of the form:

$$g(x) = (x + a^{L})(x + a^{L+1})(x + a^{L+2})\ldots(x + a^{L+2T-1})$$

where $0 \leq L < 255$ and $T=16$; and

storing the one or more codewords in the macro-array of magnetoresistive storage cells.

10. (original) The method of claim 9, comprising:

retrieving the stored codewords from the macro-array;

decoding each codeword to provide a plurality of sub-sector units of decoded data; and

assembling the decoded sub-sector units to provide a sector unit of decoded data.

11. (original) A solid state storage device comprising:

a Reed-Solomon encoder arranged to encode original data to generate one or more codewords including 2T check symbols, using a generator polynomial g(x) of the form:

$$g(x) = (x + a^{L})(x + a^{L+1})(x + a^{L+2})\ldots(x + a^{L+2T-1})$$

where $0 \leq L < 255$ and $T=16$;

at least one array of magnetoresistive storage cells arranged to store the one or more generated codewords; and

a Reed-Solomon decoder arranged to decode the stored one or more codewords to retrieve the original data.

12. (original) The device of claim 11, wherein L=1.

13. (original) The device of claim 11, wherein L=112.

14. (original) The device of claim 11, wherein the encoder is arranged to encode a sector of original data of length 512 bytes to generate four codewords each of length 160 bytes including 128 information symbols and 2T=32 check symbols.

15. (original) The device of claim 14, comprising a macro-array having a plurality of arrays of magnetoresistive storage cells arranged to store the four codewords.

16. (original) The device of claim 15, wherein the macro-array is arranged to store the four codewords, such that at least a reciprocal integer fraction of the four codewords is accessible substantially simultaneously.

17. (original) The device of claim 15, wherein the macro-array comprises at least 320 arrays, each array being arranged to store at least two symbols of the encoded data.

Claims 18-19 (canceled)